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CORTISONE FROM VEGETABLE SOURCES

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In the more recent years Cortisone has gained popularity as a specific in the treatment of Arthritis and Rheumatic fevers. It is an end product obtained from Ox-bile, after a series of labourious chemical processes, involving at least, not less than 37 operations. The complicated nature of the process entailed in its preparation, coupled with the very small quantity of the raw material available in the Ox-bile, has necessarily rendered this as a costly drug beyond the reach of men of average means. Naturally, therefore attention had to be diverted on possible alternative vegetable sources of the drug.

The discovery of *Sarmentogenin,* a steroidal sapogenin in the seeds of an African creeper *Strophanthus sarmentosus* DC. indicated great promise with much less chemical processes involved in the extraction of Cortisone than was required in the case of Ox-bile. As a natural sequence, expeditions were set out to West Africa to search for possible sources of Cortisone from plants and also with a view to introduce such plants into America and England for purposes of commercial exploitations. The expeditions resulted in the discovery of a few sources of raw materials for the synthesis of Cortisone. Among those, Yams and Sisal plants would deserve special mention.

Diosgenin, a steroidal sapogenin, found in the roots of certain species of *Dioscorea,* has attracted attention as a source for the synthesis of Cortisone. *Botogenin,* a related compound to *Diosgenin* was also discovered by Marker in 1950 in *Dioscorea mexicana* Guild. (*Vide* Indian Journal of Pharmacy, Vol. 12, 1950, p. 217, under Notes & News—"More Cortisone Sources"). The occurrence of these compounds in the roots of different species of Dioscoreas, has given importance to Dioscoreas as a possible source of Cortisone. Also, the percentage of the steroidal sapogenin found in the Dioscoreas, as compared with *Strophanthus sarmentosus* DC. has given added interest. Thus while the highest yield of *Sarmentogenin* from *Strophanthus sarmentosus* DC. has been reported to be only 1.2% (D. S. Correll *et al*—1955, p. 357) some of the species of *Dioscorea* especially from Veracruz, have indicated 8.5% to 10.1% of diosgenin content (D. S. Correll *et al*—1955, p. 336). The Indian specie of *Dioscorea,* so far analysed show *Diosgenin* in the proportion of 2.1% (*Dioscorea prazeri,* Prain & Burkill) to 4.8% (*Dioscorea deltoidea* Wall; Ishwar Chandra *et al*—1955). It may also be mentioned here, that in Mexico, the tubers of *Talinum lineare* H. B. K. which somewhat resemble those of yams, are also being tried for Cortisone, as the tubers themselves have found way with the native Mexicans, in the treatment of rheumatism.

Hecogenin a compound found in the juice of Sisal plant (*Agave sisalana,* Perrine) has also been considered as quite a favourable source for the synthesis of Cortisone. The extraction of *Hecogenin* from the juice of the leaves of Sisal plants has already been patented in U.S.A. Even though Sisal plants are quite common in many parts of India, and also commercially exploited for the fibre, the juice, which forms nearly 43%-50% of the leaves, is wasted only, being, so far, considered as not of any use. The extraction of *Hecogenin* for the synthesis of Cortisone from the hitherto wasted juice of the Sisal plants, would no doubt open a new and profitable venue of commercial enterprise in our own country. This will be appreciated when it is realised that in one district of West Bengal State alone, viz. Birbhum, nearly 1000 acres of land is known to come under cultivation of this economic fibre plant, which can yield appreciable quantity of raw material for the synthesis of Cortisone.

Several species of plants are known in India as possessing curative properties of rheumatism and many are also used in the native medicine. The *sapogenin* derivatives, which have been indicated as potential source for the synthesis of Cortisone have also been isolated from such species of *Asparagus* as *A. racemosus* Willd., *A. gonoclados* Baker, and *A. adscendens* Roxb. But, so far, however, no serious attempt at all appears to have been made for the preparation of Cortisone from the possible Indian sources. Efforts made in this direction, can be expected to yield useful results, especially as the rich vegetable resources of our country could afford possible sources of the steroidal *sapogenin* and related products for the synthesis of Cortisone.

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